Applicant : Ravi Narasimhan   Attorney's Docket No.: MP0256 / 13361-050001
Serial No. : 10/656,001
Filed   : September 5, 2003
Page   : 14 of 21

REMARKS

Claims 1-55 were pending before amendment. Claims 1, 3, 12, 14, 23, 25, 34, 36, 45 and

47 have been cancelled. Claims 2, 4-11, 13, 15-22, 24, 26-33, 35, 37-44, 46 and 48-55 have

been amended. Claims 56-59 are new. No new matter has been added. Support for the added

claims can at least be found in the specification in paragraph 17. Reexamination and

reconsideration is respectfully requested in view of the forgoing amendments and these remarks.

Applicant notes with appreciation that claims 9, 11, 20, 22, 31, 33, 42, 44, 53 and 55

were merely objected to by the Examiner as being dependent on a rejected base claim, but would

be allowable if rewritten in independent form including all of the limitations of the base claim

and any intervening claims. Applicant has as well amended the original claims to clarify the

relationship of the equation to the apparatus, computer program, method or system as

appropriate. Applicant respectfully asserts that these claims are in condition for allowance.

Claim Rejections Under 35 U.S.C. 112

Claim 1 was rejected under 35 U.S.C. 112 because of an informality. Claim 1 has been

cancelled rendering this rejection moot. Applicant notes that where the limitations of claim 1 as

originally presented were incorporated into dependent claims from above, the noted informality

was corrected.

Claim Rejections Under 35 U.S.C. 102(e)

Claims 1-8, 10, 12-19, 21, 23-30, 32, 34-41, 43, 45-52, and 54 stand rejected under 35

U.S.C. 102(e) based on U.S. Patent Publication number 2003/0223391 to Malaender. Applicant

respectfully traverses the rejection.

Claims 1-3, 12-14, 23-25, 34-36 and 45-47 have been cancelled, rendering a portion of

this rejection moot. As to the remaining claims, Applicant will address those below.

Claim 4

Claim 4 is directed to a method that includes selecting a subset of active antennas from a

plurality of available antennas in a multi-element antenna system, and selecting a constellation

for transmission on the active antennas including selecting different constellations for two or

more of the active antennas.

Malaender is directed to a method and system for employing antenna arrays. In the

method, techniques are described for adjusting a number of antennas to employ, the on/off

patterns for the antennas, and the eigenmode values (See Malaender Abstract). However,

Malaender does not teach or suggest selecting a constellation for transmission on the active

antennas including selecting different constellations for two or more of the active antennas. The

Examiner has suggested that Malaender in the Abstract teaches this limitation. Applicant

respectfully disagrees. The Abstract of Malaender is silent as to the selection of constellations

for transmission on the antenna arrays. Further, the remainder of the specification of Malaender

provides no teaching for the selection of constellations and particularly for the selection of

different constellations for two or more of the active antennas. Accordingly, Applicant

respectfully asserts that claim 4 as presented is allowable over Malaender.

Claims 2, 5, 6, 8 and 10 depend from claim 4 and are allowable for at least the same

reasons set forth above with respect to claim 4.

Claim 7

Claim 7 is directed to a method that includes selecting a subset of active antennas from a

plurality of available antennas in a multi-element antenna system where the selecting comprises

selecting an optimum number of antennas to maximize a minimum signal-to-noise ratio (SNR)

margin.

Malaender does not teach or suggest Applicant's claimed method including selecting an

optimum number of antennas to maximize a minimum signal-to-noise ratio (SNR) margin in a

multi-element antenna system. The Examiner rejected claim 7 based on paragraph 4 of the

Malaender reference. Paragraph 4 of the Malaender reference is a background paragraph that

describes a single antenna system. In a single antenna system, no selection of a subset of active

antenna occurs, because, principally, only one antenna exists. Applicant respectfully asserts that

the background section indicated by the Examiner does not teach or suggest Applicant's claimed

method in a multi-antenna system. Further, having reviewed the remaining portion of

Malaender, Applicant respectfully suggests that nothing in Malaender teaches or suggests

Applicant's claimed selecting step.

As is discussed above, Malaender shows a system and methods that vary three parameters

to achieve better throughput (the three parameters being the number of antennas, the on/off

patterns of selected antennas, and the eigenmodes). The first parameter that is varied is the

number of antennas to employ (Abstract and page 1, col. 2, paragraph 16). In determining the

number of antennas to employ, Malaender shows selecting the number of antennas to optimize

the link capacity given a current channel matrix (paragraph 44). Further, while Malaender does

discuss the evaluation of signal to noise ratio (SNR), he/she does so only in the context of

adjusting the constellation size (See paragraph 25 of Malaender). Malaender does not teach or

suggest using SNR or more particularly SNR margin to determine an optimum number of

antennas to select. Understandably, SNR in the Malaender system is not a parameter that is

adjusted. More particularly, a minimum SNR is established for a given environment, and then

throughput is optimized (that is, link capacity is optimized for that fixed SNR value) (See

paragraph 42, which determines a spreading gain for a given SNR environment). Applicant's

claimed method selects a number of antennas to maximize a minimium SNR margin. Malaender

does not teach or suggest selecting a number of antennas to maximize a minimum SNR margin.

Accordingly, Applicant respectfully asserts that claim 7 is allowable over Malaender for at least

this reason.

Claim 15 and its dependent claims

Claim 15 is directed to an apparatus where the processor selects different constellations

for two or more of the active antennas. Claim 15 is allowable over Malaender for at least the

same reasons set forth above with respect to claim 4.

Claims 13, 16, 17, 19 and 21 depend from claim 15 and are allowable for at least the

same reasons set forth above with respect to claim 15.

Claim 18

Claim 18 is directed to an apparatus where the processor is operative to select an

optimum number of antennas to maximize a minimum signal-to-noise (SNR) margin. Claim 18

is allowable for at least the same reasons set forth above with respect to claim 7.

Claim 26 and its dependent claims

Claim 26 is directed to an apparatus including means for selecting different constellations

for two or more of the active antennas. Claim 26 is allowable over Malaender for at least the

same reasons set forth above with respect to claim 4.

Claims 24, 27, 28, 30 and 32 depend from claim 26 and are allowable for at least the

same reasons set forth above with respect to claim 26.

Claim 29

Claim 29 is directed to an apparatus where the means for selecting selects an optimum

number of antennas to maximize a minimum signal-to-noise (SNR) margin. Claim 29 is

allowable for at least the same reasons set forth above with respect to claim 7.

Claim 37 and its dependent claims

Claim 37 is directed to a system where the processor is operative to select different

constellations for two or more of the active antennas. Claim 37 is allowable over Malaender for

at least the same reasons set forth above with respect to claim 4.

Claims 35, 38, 39, 41, 43 and 56 depend from claim 37 and are allowable for at least the

same reasons set forth above with respect to claim 37.

Applicant : Ravi Narasimhan
Serial No. : 10/656,001
Filed : September 5, 2003
Page : 19 of 21

Attorney's Docket No.: MP0256 / 13361-050001

Claim 40 and its dependent claims

Claim 40 is directed to a system where the processor is operative to select an optimum number of antennas to maximize a minimum signal-to-noise (SNR) margin. Claim 40 is allowable for at least the same reasons set forth above with respect to claim 7.

Claim 57 depends from claim 40 and is at least allowable for the same reasons as claim 40.

Claim 48 and its dependent claims

Claim 48 is directed to a computer program including a step of selecting different constellations for two or more of the active antennas. Claim 48 is allowable over Malaender for at least the same reasons set forth above with respect to claim 4.

Claims 46, 49, 50, 52 and 54 depend from claim 48 and are allowable for at least the same reasons set forth above with respect to claim 48.

Claim 51

Claim 51 is directed to a computer program where the selecting step selects an optimum number of antennas to maximize a minimum signal-to-noise (SNR) margin. Claim 52 is allowable for at least the same reasons set forth above with respect to claim 7.

Claims 58 and 59

Claims 58 and 59 depend from allowed claims 42 and 44, respectively, and are believed to be in allowable form.

Applicant : Ravi Narasimhan   Attorney's Docket No.: MP0256 / 13361-050001
Serial No. : 10/656,001
Filed   : September 5, 2003
Page   : 20 of 21

CONCLUSION

It is believed that all of the pending claims have been addressed in this paper. However,

failure to address a specific rejection, issue, or comment, does not signify agreement with or

concession of that rejection, issue or comment. In addition, because the arguments made above

are not intended to be exhaustive, there may be reasons for patentability of any or all pending

claims (or other claims) that have not been expressed. Finally, nothing in this paper should be

construed as an intent to concede any issue with regard to any claim, except as specifically stated

in this paper, and the amendment of any claim does not necessarily signify concession of

unpatentability of the claim prior to its amendment.

All Claims should now be in condition for allowance, and a notice to that effect is

respectfully solicited.

A submission of Credit Card Payment Request authorizing payment of the $3,000.00

excess claim fee is attached. Please apply any other required fees or any credits to deposit

account 06-1050, referencing the attorney docket number shown above.

Applicant respectfully requests a two-month extension of time up to and including

December 13, 2005. A submission of Credit Card Payment Request authorizing the $450.00

extension of time fee is attached. Please apply any other required fees or any credits to deposit

account 06-1050, referencing the attorney docket number shown above.

Applicant   : Ravi Narasimhan   Attorney's Docket No.: MP0256 / 13361-050001
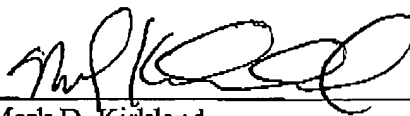Serial No. : 10/656,001
Filed   : September 5, 2003
Page   : 21 of 21

Please apply any required fees or any credits to deposit account 06-1050, referencing the

attorney docket number shown above.

Respectfully submitted,

Date:_____12/13/05_____

Mark D. Kirkland
Reg. No. 40,048

Customer No.: 26200

Telephone: (650) 839-5070
Facsimile: (650) 839-5017

10555462.doc